UNIVERSITY OF QUEENSLAND

Computer Centre

NEWSLETTER

authorization: Director of the Computer Centre

1   FILE CREATION AND ACCESS DATES AFTER 4 JANUARY 1975

The following is an extract of a memorandum from Digital Equipment
Corporation with a warning relevant for most users:

"   When the software for the PDP-6 was being designed in 1964, a
12-bit date format was established for file creation and access
dates.   In order to maintain compatibility with old programs, that
format was retained in successive monitor releases. Unfortunately,
the 12-bit format cannot represent any date after January 4, 1975.
Therefore, a DATE75 project was initiated in order to convert DEC-
supplied software to a new 15-bit format that properly represents
dates well into the next century. The 5.06B monitor release intro-
duced the new format. Support for 15-bit dates was designed to
minimize conversion problems. Programs coded in a simple, straight-
forward fashion will work properly with 15-bit dates without any
modification.

     Our experience in actually converting our existing software
has been considerably more difficult than we ever anticipated. We
keep finding new DATE75 problems. As a result, we have been forced
to release a large amount of software on the November distribution
tape; and customers will not have as much time as we would wish to
install it all. Naturally, we recommend installing all of this
software well before January 5, 1975. If this is not done, many
DATE75 problems will be encountered. Keep in mind that DATE75
problems are essentially cosmetic.   It is a nuisance to have files
with incorrect creation and access dates, but it is not a catastrophe.
However, installations probably should warn their users of the
possibility of such problems in order to avoid any unnecessary
concern if a DATE75 problem is encountered.

     We regret very much the lateness of the delivery of this soft-
ware. We simply did not anticipate all the problems we would
encounter. Customers should take advantage of the lesson we learned
so painfully by immediately upgrading their DECsoftware to the
versions released on the November tape and by starting conversion of
their own software. Programs written entirely in FORTRAN (F40 or
F10), COBOL, BASIC, ALGOL and AID need no conversion but the latest
operating systems must be used.

MACRO-10 Programs

The real problem is with programs written in MACRO-10. Our experience indicates that it is not sufficient for a programmer to simply 'think through' a program's structure and functions to determine whether it has a DATE75 problem. It is not sufficient merely to give the program a quick test with a monitor set to a date after January 4, 1975. It is necessary to run the total system for several hours in order to find all the subtle DATE75 problems.

Please keep in mind that DATE75 fixes have proven incredibly error prone. You must use great care and very thorough testing in order to be confident that DATE75 problems have been fixed.

User-written software can follow the guidelines below to prevent DATE75 bugs. See the MONITOR CALLS manual under ENTER or RENAME for the DATE75 format.

I On ENTER or RENAME

   A. Perhaps the most frequent cause of subtle DATE75 problems is the re-use of LOOKUP.ENTER blocks without completely re-initializing the values. If using the block returned by a LOOKUP for an ENTER or RENAME:

   (1) If zeroing fields to get monitor defaults, do BOTH:
           HLLZS E+1
           SETZM E+2   or neither
        Doing only one or the other will result in a bug.

   (2) If those two words are left alone, anything that worked before will work now as well.

   B. Setting up an ENTER or RENAME without a LOOKUP

   (1) The monitor will use the default date as a creation date if the HIGH DATE 2 and LOW DATE 2 bits are zero. Otherwise both fields are used to make a 15-bit date. Setting one field and not the other will result in a bad creation date.

   (2) All 15 bits of DATE 1 must be either 0 or the date accessed will be determined by whatever is set.

II On extended ENTER or RENAME, the same principles apply with the appropriate fields: .RBEXT,.RBPRV.

Most of the problems we found were in cases where we believed our programs followed these procedures. Do not believe yours do!

If these procedures are not followed, two symptoms will make it readily apparent:

(1)   The dates will be 11 years and 4 days before they should be: the high order three bits were lost, or low order inappropriately preserved.

(2)   The date will be January 5, 1975: the low order bits were lost, or the high order bits inappropriately set to 001.   "

If you keep only source and relocatable files of FORTRAN, COBOL, BASIC or ALGOL, and use MACRO only for non-I/O subroutines, there should be no problem. Core image files, i.e. those that have been LOADed and SAVEd, could produce files with wrong creation dates if they were SAVEd before the release of the latest operating systems.

FOROTS version 3(340) and LIBOL 6B are currently being tested and will be released by Monday, 2nd December.

Programs from DECUS and other sources may have DATE75 problems. Users are requested to report any observed case for investigation.

A new program, DATE75, provides the capability for correcting the creation and/or access date of any file.

2   NEW VERSION OF THE BATCH CONTROLLER

BATCON has been modified to reduce the accumulation of unwanted files.   When a job is terminated by its cost limit, BATCON version 11(604) increases the cost limit to allow deletion of the temporary files created by SPRINT for the run.   Other changes reduce the size of log files for system jobs and correct some minor errors.

3   NEW PLOTTING ROUTINES

New versions of the plotting routines in PLO:CALCMP.REL has   been released.   The main reasons for this release are to avoid possible DATE75 problems and to give output files generated names to eliminate spooling to non-existent devices - two problems documented previously.

Noticeable changes are minimal, the major one being that the plot file will have a name generated to be unique and to reflect the destination plotter device. This is in line with other spooled devices, e.g. LPT. A file with the specified name may be obtained by using the command "ASSIGN DSK:PLT:" to give a file named "file.DAT". This is consistent with other spooled devices.

The format of the plot files output has been revised. Plots with
many long straight lines are recorded on much smaller files in
this format.   This, of course, is a desirable feature, but the
plotting time limit estimated from the file size by the PLOT command
is unreliable.   WARNING - in these cases one must specify an
adequate plot time limit rather than rely on the default estimate.

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